DRISI

Caltrans Division of Research, Innovation and System Information

Research Results

Enhancing IRIS Transportation Management Software

IRIS provides an alternative, low-cost, integrated advanced traffic management system for rural districts

Transportation Safety and Mobility

JANUARY 2016

Project Title:
Enhancement and Technical Support of Intelligent Roadway Information System (IRIS) in Caltrans Districts 1, 2, 5 and 10

Task Number: 2293

Start Date: June 1, 2011

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Product Category: New or improved tool or equipment

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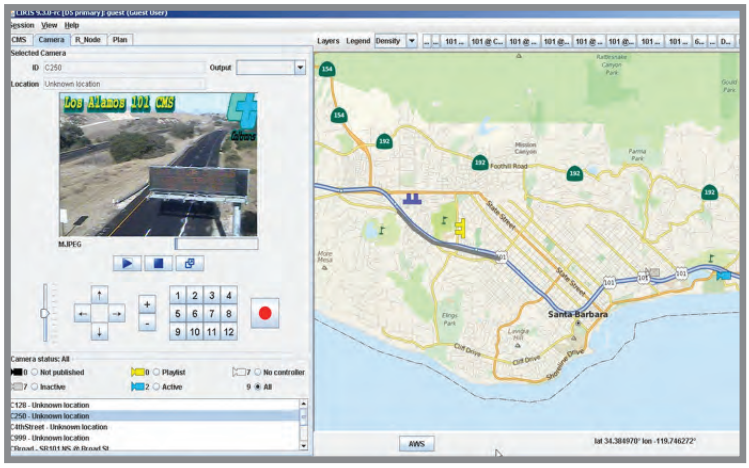
WHAT WAS THE NEED?

An advanced traffic management system (ATMS) provides real-time information on highway conditions to detect traffic incidents, manage traffic flow, and disseminate traveler information, helping traffic managers improve mobility and safety. However, most ATMS programs are not well suited for rural districts in terms of features, functionality, and cost. As a result, rural areas often address their needs by combining disparate solutions that have different management, administrative, and operating requirements, which can be expensive and challenging to maintain. Rural districts need a unified ATMS that is specifically designed for a rural environment.

The Minnesota Department of Transportation (MnDOT) developed the open-source Intelligent Roadway Information System (IRIS) software and made it freely available in 2007, making it easier and more affordable to tailor a unified ATMS for rural districts. As an initial test, Caltrans successfully deployed IRIS in Stockton, Caltrans District 10. A pilot with limited ATMS features was also tested in Districts 1, 2, and 5. To continue the success and adoption of IRIS, more functionality needed to be added.

WHAT WAS OUR GOAL?

The goal was to enhance IRIS features and functionality and expand its use to other rural districts.



Controllable closed-circuit TV (CCTV) camera within IRIS alongside a display of Intelligent Transportation System elements on an integrated map

Caltrans

Caltrans provides a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability.

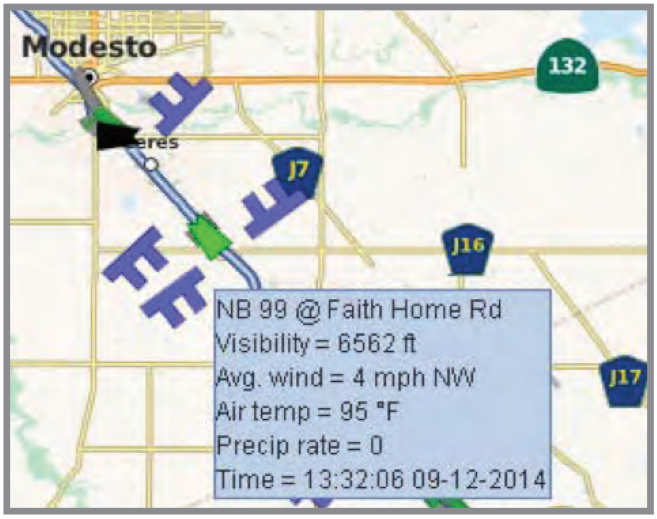
WHAT DID WE DO?

Caltrans, in partnership with the University of California, Davis Advanced Highway Maintenance and Construction Technology Research Center and MnDOT, incorporated more features to IRIS and streamlined the build and deploy process. As part of the open-source effort, some of the features now available to partnering agencies include:

- Device drivers
- Automated warning system
- Testing
- CMS message library
- Google Earth output using the Keyhole Markup Language
- Road weather information system map integration
- CCTV features
- Reporting enhancements

WHAT WAS THE OUTCOME?

Deployment of IRIS to Caltrans Districts 1, 2, 5, and 10 was successful. The number of traffic management software applications and servers in the four districts has been reduced, with IRIS assuming the roles. The improved and simplified build and deploy process facilitates adoption and makes it easier to train new developers. Through knowledge transfer from the research team, supporting IRIS has transitioned to a third-party contractor. Caltrans District 3 is expected to be the next district to implement part of the IRIS system.



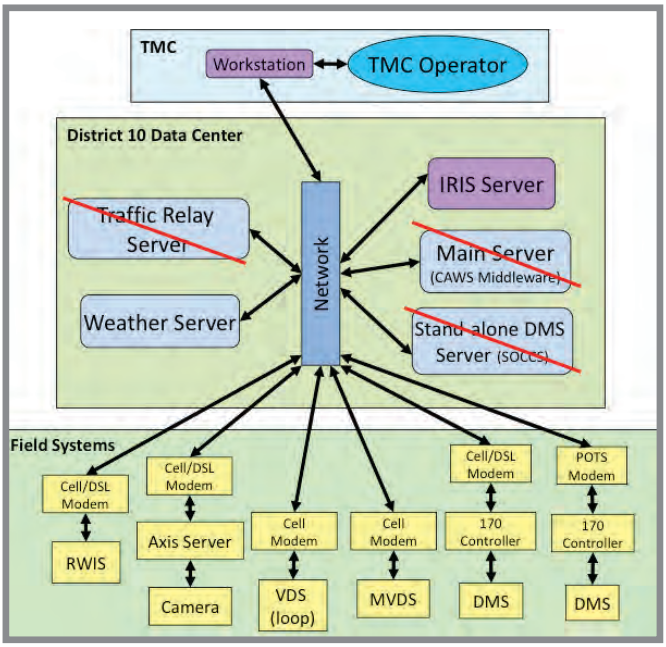
Automated warning system that includes a road weather information system and warning thresholds

WHAT IS THE BENEFIT?

Rural areas need a unified ATMS that is designed for their traffic requirements and environment. IRIS offers rural districts a robust, unified, traffic management program that is extensible, scalable, and reliable. Traffic management operators can centrally manage traffic devices and applications from a single, integrated interface at a fraction of the cost of a full ATMS running in urban areas. The open-source software enables collaboration among government agencies, universities, and private companies, and reduces life-cycle costs by approximately 72%, as compared to the previous ATMS.

LEARN MORE

To view the complete report:
www.dot.ca.gov/research/researchreports/reports/2014/final_report_task_2293.pdf



Caltrans District 10 architecture before and after IRIS was deployed